

Monday, December 12, 2016 4:18:45 PM

Page 1

NS1

Stop *NS2*

Customer:

Run Start *NR1*

Stop ***NR2***

NR2

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube ☐</td> <td style="width:15%;">Cross tube ☐</td> <td style="width:15%;">Water Jet ☐</td> <td style="width:15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																							
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OTHER :																																																															

Work Order ID 154415

Monday, December 12, 2016 4:18:46 PM

154415

Page 2

Item ID: D4463-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Tank Top Assembly
Start Date: 1/3/2017 Start Qty: 2.00 ***2*** Cust Item ID:
Required Date: 1/9/2017 Req'd Qty: 2.00 ***2*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	NC BRAKE	0.00							
130									
Small Fab	Memo	0.08							
Small Fab	C'SINK HOLES AS PER DWG								
140	QC5- Inspect part completeness to step on W/O	0.00							
140									
QC	Memo	0.01							
Quality Control									
150	Chemical Conversion Coat per QSI005 4.1	0.00							
150									
HandFinish	Memo	0.04							
Hand Finishing									

DA 36 9-8

17/02/02

2

DAS 36 9-8

FEB 02 2017

(x2) 0 2017/02/01

BEB

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
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OTHER :					

Work Order ID 154415

Monday, December 12, 2016 4:18:46 PM

154415

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 *160* QC Quality Control	QC7-Inspect Chemical Conversion Coat Memo	0.00 0.00				2x			DAS 36 9-89 17/02/07
170 *170* Small Fab Small Fab	Memo INSTALL ANCHOR NUTS AS PER DWG	0.00 0.19				2x			DAS 36 9-89 17/02/07
180 *180* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.01				2			DAS 38 3-89 FEB 07 2017

DQA: _____ Date: _____



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Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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OTHER : ☐					

Work Order ID 154415

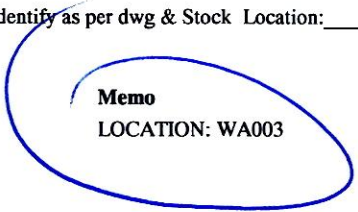
Monday, December 12, 2016 4:18:46 PM

154415

Page 4

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190 *190* Packaging Packaging	Identify as per dwg & Stock Location: _____  Memo LOCATION: WA003	0.00 0.00							
200 *200* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.03							 

DQA: _____ Date: _____



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Picklist Print

Monday, December 12, 2016 4:18:45 PM

Page 1

Work Order ID: 154415

154415

Parent Item: D4463-041

D4463-041

Parent Item Name: Tank Top Assembly

Start Date: 1/3/2017

Required Date: 1/9/2017

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP REV:A 12.03.08 NEW ISSUE DD VERF:EC
12.04.25 AS PER DWG REV.B DD VERF:EC

IPP REV:B

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6S.063		Purchased		No		100	sf	331.7800	3.864	8.134737			

M6061T6S 063

6061-T6 .063 Sheet

PR 10/12/16

Location	Loc Qty	Loc Code
MAT021	331.78	
M133511	2.6	
M134377	3.3	
M134830	157.98	
M136251	167.9	

MS20426AD3-4

Purchased

No

170

Each

4,140.000

48

96

MS20426AD3-4

RIVET

17/02/07

DAS
36
9-89

Location	Loc Qty	Loc Code
GA	53	
m131697	53	
ST312	4087	
m134294	4087	

NAS1473R3

Purchased

No

170

Each

96.0000

24

48

NAS1473R3

Anchor Nut

17/02/07

DAS
36
9-89

Location	Loc Qty	Loc Code
GA	21	
m132879	21	
ST260	75	
m135895	50	
m136182	25	

~~M136450~~

33

M136450

15c

DQA: _____ Date: _____



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OTHER : ☐					

DART AEROSPACE LTD		Work Order:	154415
Description: Tank Top		Part Number:	D4463-1
Inspection Dwg: D4463 Rev: D		Page 1 of 2	

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.098	+0.004/-0.001	0.099	✓		Drill	
Ø0.206	+0.005/-0.001	0.208	✓		tape	
Ø1.00	+0.012/-0.001	1.003	✓			
1.15	+/-0.030	1.158	✓			
1.85	+/-0.030	1.85	✓			
2.20	+/-0.030	2.20	✓			
2.30	+/-0.030	2.30	✓			
5.29	+/-0.030	5.29	✓			
8.30	+/-0.030	8.30	✓			
8.93	+/-0.030	8.93	✓			
8.98	+/-0.030	8.98	✓			
9.31	+/-0.030	9.31	✓			
10.42	+/-0.030	10.42	✓			
11.26	+/-0.030	11.26	✓			
1.61	+/-0.030	1.61	✓			
1.68	+/-0.030	1.68	✓			
1.82	+/-0.030	1.82	✓			
3.41	+/-0.030	3.41	✓			
3.79	+/-0.030	3.79	✓			
6.43	+/-0.030	6.43	✓			
7.36	+/-0.030	7.36	✓			
7.80	+/-0.030	7.80	✓			
10.75	+/-0.030	10.75	✓			
11.38	+/-0.030	11.38	✓			
11.80	+/-0.030	11.80	✓			
13.27	+/-0.030	13.27	✓			
1.15	+/-0.030	1.15	✓			
3.00	+/-0.030	3.00	✓			
3.26	+/-0.030	3.26	✓			
7.00	+/-0.030	7.00	✓			
10.74	+/-0.030	10.74	✓			
11.00	+/-0.030	11.00	✓			
11.63	+/-0.030	11.63	✓			
15.29	+/-0.030	15.29	✓			
15.48	+/-0.030	15.48	✓			
19.48	+/-0.030	19.48	✓			
23.48	+/-0.030	23.48	✓			
23.67	+/-0.030	23.67	✓			
24.11	+/-0.030	24.11	✓			
27.46	+/-0.030	27.46				

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

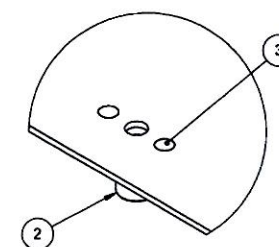
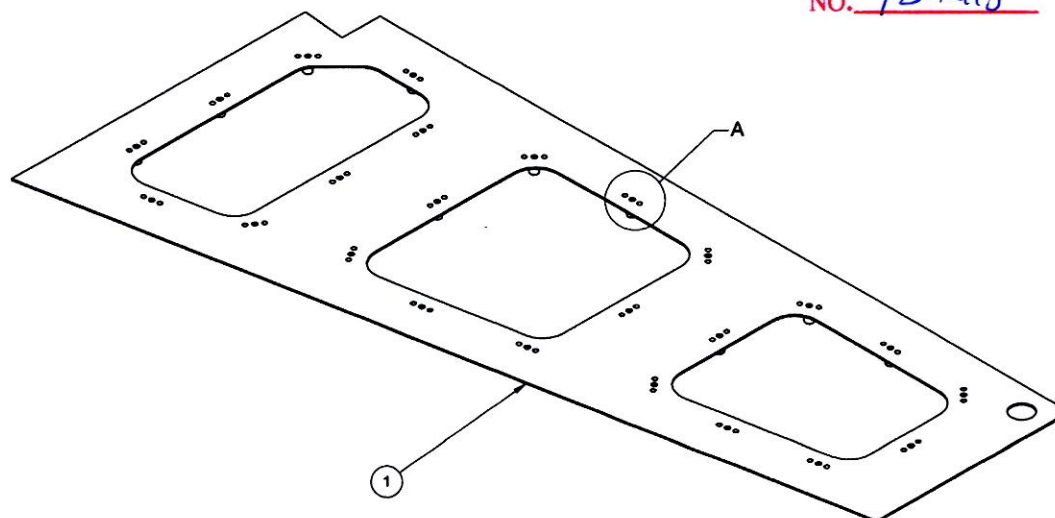
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause				FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
	X	D4463-041	TANK TOP ASSEMBLY
1	1	D4463-1	TANK TOP
2	24	NAS1473-3	ANCHOR NUT
3	48	MS20426AD3-4	RIVET, CSK

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 154418



DETAIL A
24 PL

D4463-041 TANK TOP ASSEMBLY

RELEASED
2014-06-11

- NOTES:
1) MATERIAL: N/A
2) FINISH: N/A
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: N/A
7) WEIGHT: 1.77 lbs

D	ADDED RIVET PILOT HOLES TO D4463-9/11 SHEET 9-12 REF NCR 13-3100 UPDATED D4463-3F (83-4)	ML	14.05.13
C	ADD DIMS: ZN B5-5, D5-5, B2-11, B7-11, D3-11. ADD -13, MODIFY -1/11.	DC	12.03.23
B	ADD D4463-041, ZN C5-1, UPDATED -1/3/5/7/9, COMBINED -11 & -13 INTO -11.	DC	11.12.14
A	NEW ISSUE	DC	11.10.19
REV.	DESCRIPTION	BY	DATE
DESIGN	ML	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D4463 SHEET 1 OF 14 REV. D SCALE NTS COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR FOR CONSTRUCTION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DRAWN	ML		
CHECKED	AP		
MFG. APPR.	JLM		
APPROVED	MP		
DE APPR.	DS	AUX TANK	
DATE	14.05.13		

APPROVED

DQA: _____ Date: _____

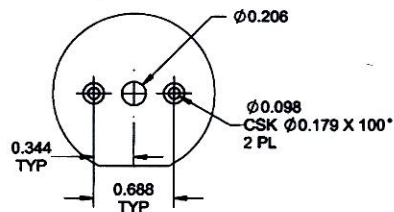


WORK ORDER NON-CONFORMANCE / UPDATE

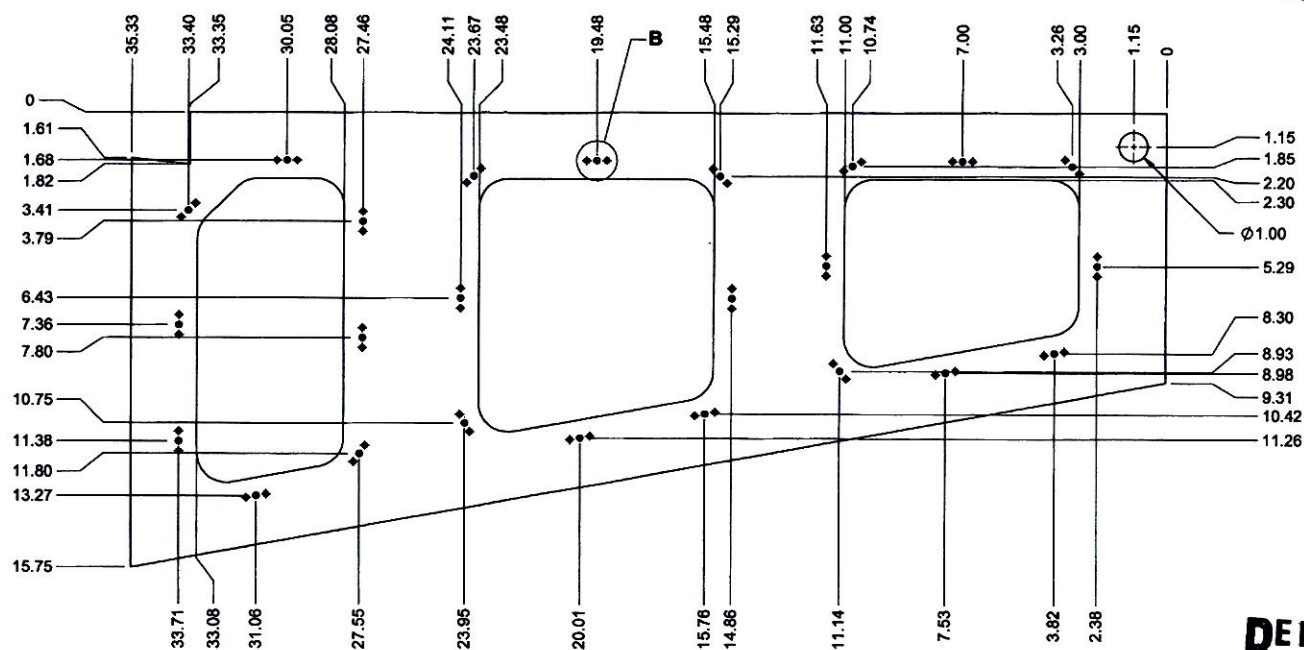
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td style="border: none;"></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																
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OTHER : _____																																																																				



DETAIL B
(24 PL)



D4463-1 TANK TOP

NOTES:

- 1) MATERIAL: 6061-T6/T62 ALUMINUM SHEET, 0.063 THICK
PER QQ-A-250/11 OR AMS-QQ-A-250/11
OR AMS 4025 OR AMS 4027 OR ASTM B209
REF DART SPEC M6061T6S.063
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 1.70 lbs

RELEASED
2014-06-11

APPROVED	DESIGN	ML	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
	DRAWN	ML		
	CHECKED	AP	DRAWING NO.	REV. D
	MFG. APPR.	JLM	D4463	SHEET 2 OF 14
	APPROVED	MP	TITLE	SCALE
	DE APPR.	DS	AUX TANK	NTS
	DATE	14.05.13	COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
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OTHER : _____					